

(12) INTERNATIONAL PUBLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number  
**WO 2004/059771 A2**

(51) International Patent Classification<sup>7</sup>: **H01M 8/24**

(21) International Application Number:  
PCT/JP2003/016094

(22) International Filing Date:  
16 December 2003 (16.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2002-374452 25 December 2002 (25.12.2002) JP

(71) Applicant (for all designated States except US): **NISSAN MOTOR CO., LTD.** [JP/JP]; 2, Takara-cho, Kanagawa-ku, Yokohama-shi, Kanagawa 221-0023 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NAKAJIMA, Yasushi** [JP/JP]; 886-4, Chitose, Takatsu-ku, Kawasaki-shi,

Kanagawa 213-0022 (JP). **KUSHIBIKI, Keiko** [JP/JP]; 6-22, Honfujisawa 2-chome, Fujisawa-shi, Kanagawa 251-0875 (JP). **SHIBATA, Itaru** [JP/JP]; 16-17, Jomyoji 6-chome, Kamakura-shi, Kanagawa 248-0003 (JP). **SATOU, Fuminori** [JP/JP]; 10-29-206, Kamariyagashi 7-chome, Kanazawa-ku, Yokohama-shi, Kanagawa 236-0042 (JP).

(74) Agents: **MIYOSHI, Hidekazu** et al.; 9th Floor, Toranomon Daiichi Building, 2-3, Toranomon 1-chome, Minato-ku, Tokyo 105-0001 (JP).

(81) Designated States (national): CN, KR, US.

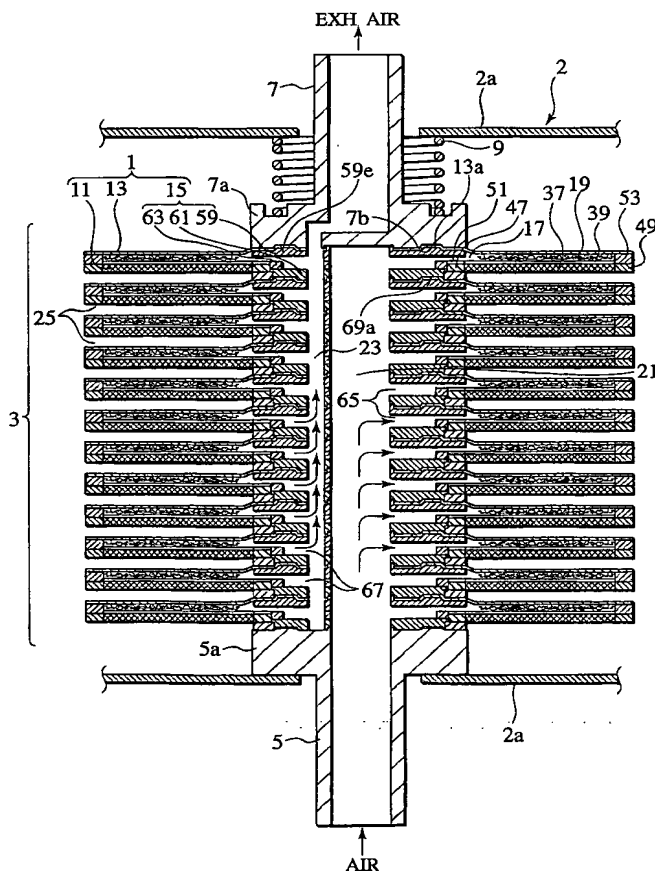
(84) Designated States (regional): European patent (DE, FR, GB).

Published:

— without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: FUEL CELL



(57) Abstract: A fuel cell comprises: a cell plate (11; 110; 110A, 110B); an electroconductive gas separator (13; 130; 130A; 130B) which cooperates with the cell plate, to form a gas passage; and a holder member (15; 150; 150A; 150B) which holds a part of the cell plate. The cell plate includes a supporting body (37; 370; 370A; 370B), and a cell (39; 390; 390A; 390B) formed on the supporting body. The cell includes a solid electrolyte (43), a cathode substance layer (45) formed on one surface of the solid electrolyte, and an anode substance layer (41) formed on the other surface of the solid electrolyte.

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP 03/16094

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H01M8/24 H01M8/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 344 290 B1 (BOSSEL ULF G) 5 February 2002 (2002-02-05) cited in the application figures 1,2,6 column 6, lines 21-28 column 9, lines 23-37 column 12, lines 12-25	1-8, 19, 21
X	EP 0 722 193 A (SULZER INNOTECH AG) 17 July 1996 (1996-07-17)	1-5, 8, 10-12, 14, 19-21
Y	column 3, paragraph 2 figure 2	6, 16
X	US 3 861 959 A (CADIOU JEAN) 21 January 1975 (1975-01-21) figure 1	1-5, 8, 10, 20, 21
-/-		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*A\* document member of the same patent family

Date of the actual completion of the international search

6 December 2004

Date of mailing of the international search report

11/01/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Jacquinet, P

WS 2004/059771 A2



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*